ATOMIC ENERGY newsletter

THE FIRST AND ONLY [illegible] SERVICE

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Dear Sir:

A reduction of $174-odd million in the U. S. Atomic Energy Commission's operating budget for the 1953 fiscal year was made last week by the House of Representatives. Last Friday, the reduced budget--$1,137,727,500--was sent by the House to the Senate for further action. The budget-paring was the climax of hearings by a sub-committee of the House Appropriations Committee into how the USAEC had been spending its funds. As a result of the hearings, Representative Albert Thomas, chairman of the Appropriations sub-committee, declared that "the Atomic Energy Commission is the most wasteful of all agencies in the Government". The House members of the Joint Congressional Committee on Atomic Energy sought to restore the cuts, with Representative Durham, of the Joint Committee, contending that the budget reduction would "cut the heart out" of the atomic program. Answering this, Representative Thomas said that absolutely no curtailment of operations would result. (Representative Thomas based his assertion of "most wasteful of all government agencies" on certain contractual practices of the USAEC, which came out of the hearings In the main it was certain cost-plus fixed-fee operators that provoked the statement.)

Atomic Energy of Canada, Ltd., a Government-owned company, is to take over from the National Research Council of Canada responsibility for operating the Chalk River, Ontario, atomic energy project. When Parliament recently approved the construction of a new and much larger nuclear reactor, the government anticipated that when this pile was completed the great change in the size and character of the Chalk River project would make it desirable to relieve the NRC of its responsibilities. For this reason, it is placing management of the project in the hands of an industrial company.

A session on nuclear energy will feature the Spring meeting of the American Society of Mechanical Engineers, which began yesterday, March 24th, and which will run until March 26th. Papers will be presented on "Ventilation Problems in Handling Radioactive Materials" (see page. 4, this LETTER), "The Handling of Radioactive Materials", "What Do We Mean by Nuclear Engineering?", and "Problems of Technical Training for Nuclear Energy".

"The Role of Atomic Energy in Agricultural Research" will be the 4th annual Oak Ridge Summer Symposium, to be held Aug. 25-29, this year. As presently planned, a number of sessions will be devoted to plant and animal studies with atomic energy research tools. Other lectures will deal specifically with Carbon-14 studies in both plants and animals. The Symposium is being given by the Oak Ridge Institute of Nuclear Studies and the Oak Ridge National Laboratory under the sponsorship of the University of Tennessee-USAEC agricultural research program. Inquiries concerning the symposium should be directed to the Institute at Box 117, Oak Ridge, Tenn.

New manager of the USAEC's Fernald, Ohio, area is to be Clarence L. Karl, who will replace James F. Chandler on April 1st. The Fernald area supervises for the USAEC the construction and operation of the new Feed Materials Productions Center.

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NEW PRODUCTS, PROCESSES & INSTRUMENTS...in the nuclear field...

FROM THE MANUFACTURERS- Twin scaler; an instrument offering two scalers at the cost of one. (This method of counting, using two detectors and a single electronic circuit, has been extensively used on the European continent to save laboratory space and money.) This twin scaler consists of a Higginbotham binary scaler with two input connectors, two scales of 16, and two recorders. Each scale of 16 and its recorder operates independently from the other, using a single high voltage power supply. The single high voltage power supply employs two separate regulating circuits so the voltage available at each Giger-Muller tube may be regulated to the desired value. A switch makes it possible to check the voltage of both tubes, independently. Counting rates up to and in excess of 20,000 counts per minute can be independently registered on each Veeder-Root recorder. When more accurate recording of counts is desired from a single detector, a switch is thrown placing the two scales of 16 in series, making a single Higginbotham scale of 256 totalizing on one register. This also electrically disengages the second input.--Radiation Counter Laboratories, Skokie, Ill.

A new low cost timer, model T-100, is designed to measure elapsed time in 1/100 of a minute for greater accuracy in radioactive sample counting. This particular timer will operate with all scaling instruments of this manufacturer, as well as similar scalers of other manufacturers. The unit operates on 110 v., 60 cycle current. --Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

Stainless steel, end window Geiger tube; model TGC-8. Designed especially for medical work and other applications where the rapid and accurate counting of gamma radiation is essential. Manufacturer states tube has an end-on efficiency approximately six times greater than normal mica end-window tubes, and hence is ideal for counting such gamma emitters as Iodine-131. High gamma efficiency of the tube is achieved through special construction employing multiple baffles inside the heavy metal sleeve of the tube. Physical dimensions of the TGC-8 are identical with this manufacturer's TGC-1 and 2 tubes, and therefore interchangeable. May also be used with this manufacturer's lead shields for medical survey work where it is desirable to increase directional sensitivity. Features of the new tube include operating voltage of 1100-volts; a minimum plateau length of 150-volts; and a plateau slope of approximately 2% per 100-volts. --Tracerlab, Inc., Boston 10, Mass.

ATOMIC PATENT DIGEST...latest U. S. grants & applications...

Method of making metal hydride. In part, a process for the production of uranium hydride of high bulk compressibility which comprises subjecting uranium metal at a temperature of 500 to 700 deg. C. to the action of hydrogen under a pressure of at least 1800 lbs. per square inch. U. S. Pat. No. 2,588,153 issued Mar. 4, 1952; assigned to United States of America (USAEC).

Electrical generator. In part, a conducting cylinder, a sleeve coaxially surrounding the cylinder and of an inner diameter slightly greater than the outer diameter of the cylinder, whereby there is formed an annular gap between this cylinder and the sleeve, means for maintaining a radial magnetic field across the annular gap, a sodium-potassium alloy filling at least two longitudinally spaced portions of the annular gap, and means for rotating only one of the coaxial elements around the common axis. U. S. Pat. No. 2,588,466 issued Mar. 11, 1952; assigned to United States of America (USAEC).

Thermoelectrically balanced meter network. In part, an electrical network comprising a circuit including a pair of impedances connected in back-to-back relation, a pair of movable contacts, one of the contacts being carried by each of the impedances, a voltage responsive instrument connected to these contacts, with this last connection providing thermoelectrically equivalent points, and means for bridging this circuit across a source of electrical energy. U. S. Pat. No. 2,588,564 issued Mar. 11, 1952; assigned to United States of America (USAEC).

Pretreatment of beryllium prior to coating. In part, the method of treating compositions of beryllium prior to coating which comprises making the composition cathodic in a potassium hydroxide solution having a normality of about 1 and subjecting the composition while therein to a current density of about 0.5 ampere per square inch for about three minutes, with associated treatment subsequently. U. S. Pat. No. 2,588,734 issued Mar. 11, 1952; assigned to United States of America (USAEC).

RAW MATERIALS...radioactive minerals...

UNITED STATES - Potentially significant deposits of uranium have been discovered in Wyoming by the U.S. Geological Survey, according to Secretary of the Interior Chapman. The deposits are in the Pumpkin Buttes area of the Powder River Basin in northeastern Wyoming, an arid and sparsely populated area. The discovery was made by the USGS in October, 1951, and because of the Winter snows, little prospecting was possible then. Much additional field work must be done before it is known whether or not extensive quantities of minable uranium ore are present in the area. The geologic setting of the deposits is similar to that of the low-grade uranium ore deposits on the Colorado Plateau in western Colorado, and eastern Utah, which have been known and exploited for many years. The better grade of uranium ore in the deposits near Pumpkin Buttes are in tabular to very irregular masses in soft porous concretionary tan or pink sandstones. The uranium-bearing materials have not been specifically identified yet, but a lemon yellow and a black mineral are the most common types and generally occur together. A preliminary report has been issued on this new deposit, as Circular 176, "Preliminary Report on uranium deposits in the Pumpkin Buttes area, Powder River Basin, Wyoming", by J. D. Love, USGS. The report may be obtained free from the Geological Survey, Washington 25, D.C.

OTHER FINDS & DEVELOPMENTS IN THE U. S.-Boulder, Montana: It is reported that highgrade uranium ore has been struck in an intermediate drift on the Haines property, near Alhambra Springs. The new ore is about 30-feet below the surface open cut where current operations are being conducted.....Grand Junction, Colo.: The La Sal Mining Co, is operating its uranium-vanadium mines in western Montrose county, Colorado, at capacity according to Matthew P. Rowe, general manager. The company is operating the deepest underground mine in the area.....Durango, Colo.: Substantial enlargement of the Vanadium Corp. of America's Durango plant last October, combined with the acquisition of new leases and properties last year, has materially increased the company's capacity for extracting and milling vanadium-uranium ores in the Colorado plateau area. Considerable progress also has been made in the development of uranium ore reserves in Utah. A low-cost process for the treatment of copper-uranium bearing ore has been developed at White Canyon, Colo., and enlargement of that mill's facilities is contemplated if satisfactory arrangements can be made with the USAEC.

CANADA - Uranium, and its occurrence in British Columbia, was recently outlined at the Prospectors and Developers Association, meeting in Toronto, Canada. Where uranium-bearing veins have been found in that Province (said John S. Stevenson, McGill University) the uranium mineral is the crystalline variety of uranium oxide, uraninite, rather than the pitchblende that is found in the Great Bear Lake deposit, and elsewhere in the Precambrian shield. British Columbia uraninite is not found in granite pegmatites, but rather in gold-bearing metallic veins. In these veins, the uraninite is associated with cobalt-nickel sulpharsenides and is also associated with arsenopyrite and molybdenite. An association with metallic and gangue minerals commonly found in high-temperature veins is characteristic of the known uranium deposits in British Columbia.

OTHER FINDS & DEVELOPMENTS IN CANADA - Rix-Athabasca Uranium Mines expects to commence shaft sinking this summer on its uranium property in the Goldfields area of Saskatchewan. Initially, two levels will be established, with a minimum of 1,500 feet of work carried out on each horizon. Cost of the program will be $250,000, the company's second annual meeting was told recently. Three diamond drills are at work on the property, one on straight exploration and the other two filling in gaps on the two most promising occurrences, both of which are slated for shaft work..... Nesbitt LaBine Uranium Mines has encountered what appears to be a promising and unexpected occurrence of pitchblende in a drift heading just getting underway on the first level across 3.5-feet at its property in the Athabaska area. The average of both channel and chip samples was said to be 0.47% uranium oxide, across 3.5-feet. Visible pitchblende was first observed in the west drift, some 95-feet north of the shaft, and 22-feet west of the main crosscut. The management considers the occurrence as quite promising, as it is well short of the areas slated for intensive exploration.

IONIZING RADIATION...investigations & notes...

VENTILATION PROBLEMS IN HANDLING RADIOACTIVE MATERIALS- Air locks, as they are used between "hot" and "cold" pressurized zones to protect personnel from air-borne contamination in atomic plants and laboratories, were discussed by W. W. McIntosh, General Electric Co., before the American Society of Mechanical Engineers, at the first day of the ASME's Spring meeting, yesterday, at the University of Washington, Seattle. New materials, produced by nuclear fission, more poisonous than anything previously known, are being processed on an industrial scale, and call for extraordinary measures to protect personnel working in close proximity with this type of substance, McIntosh stated. He said the principal sources of air-borne contamination were gases and vapors evolved during processing, dusts resulting from evaporated solutions, and particles released during handling of solid materials. Protecting workers against these is a job for the ventilation system of the plant or laboratory, he declared. In addition to providing protective ventilation for normal processes which take place in hoods and equipment, design consideration must be given to the effects of all types of accidents, such as explosions, fires, spills, and other personnel errors. Since an accident might make a room, or possibly a whole building unsafe for occupancy, all practicable measures must be provided in the design for limiting the spread of radioactive contamination in the event of such an occurence, he explained. This is achieved by compartmentation of the building to such an extent as is compatible with efficient operation, and by design for controlled ventilation of air flow.

In designing for directional control of air flow, he said, one method is to provide controlled differential air pressure between areas of different degrees of hazard. These areas are usually designated as zones, the uncontaminated areas being termed "cold" and the areas of greater risk termed "hot". The zones of different hazard levels are completely separated structurally. Access between zones is through air locks. Within each zone, air is supplied to areas of least risk, and exhausted principally from equipment, hoods or other areas of highest risk. Ventilation balance within the zone is such that flow through doorways is always toward the more hazardous side.

The air locks are not ventilated, but on opening the door toward the hot side, air will leave the air lock toward the zone of lower pressure, and vice versa. Air lock doors may be interlocked to prevent simultaneous opening which might upset the ventilation balance. A modulating damper is provided in the exhaust system to maintain a constant exhaust pressure so as to hold the quantity of air exhausted at a constant value, he pointed out.

NEW RADIOACTIVITY SOURCE- A 5000-curie radioactive source, five times the power of any presently available for industrial and medical research, will be available for investigations in industrial uses of atomic and nuclear science at the new Radiation Engineering Laboratory of Stanford Research Institute. Stanford will get the 5000-curie source, Cobalt-60, a gamma ray emitter, from Brookhaven National Laboratory. The new Radiation Engineering Laboratory is due to start operation in the late Spring. It will develop and engineer practical safe systems for the use of large amounts of radiations in a wide variety of possible industrial applications. Some of the promising uses to be investigated at an early date include non-destructive testing of metal castings and parts by radiography and the cold sterilization of heat-sensitive foods and drugs with gamma radiation.

RADIATION SHIELDING DEVICES- A theoretical and experimental investigation of radiation shielding devices is being conducted by the National Bureau of Standards in cooperation with the Office of Naval Research and USAEC. This particular program is devoted largely to studies of the distance radiations travel from their sources and the transformations they undergo during the process. The experimental phases of the work are designed to yield information that is essentially general in nature, but which can be readily adapted to specific problems. Whenever possible, the experiments are carried out on a small scale or on a model. In this way, a wide variety of investigations can be made of the protection problems associated with devices such as very large nuclear reactors. Ultimately, the accumulated data will form a basis from which radiation barriers of the correct thickness and material may be designed for economical and safe protection.

NEW BOOKS & OTHER PUBLICATIONS...concerning nuclear subjects...

Some Applications of Atomic Energy in Plant Science. The 11th Semi-Annual report of the USAEC, which appears as part one of this volume, reviews major developments of the past 6 months in atomic energy. Part two presents the condensed annual financial report of the USAEC for the fiscal year 1951. In part three is presented a brief review of developments in plant science research, underwritten by the USAEC, in an effort to determine the effects of ionizing radiation on all forms of life. 211 pages.--Superintendent of Documents, Wash. 25, D. C. (50¢)

Energy and Angle Distribution of the Photoprotons from Deuterium, by Martin Weiner, National Bureau of Standards. (Circular 515). For use by nuclear physicists doing experimental and theoretical work, this paper gives relativistically exact formulae and a set of graphs describing the relationship between the energy of each proton ejected when a deuteron is disintegrated by gamma rays, the energy of the photon causing the disintegration, and the angle between the directions of the photon and proton.--Superintendent of Documents, Wash. 25, D. C. (15¢)

Maximum Allowable Concentrations of Fission Products in the Air as a Function of Exposure Time and Time after Detonation; Interim Report, by Robert L. Harvey, Radiological Laboratories, Army Chemical Center, Md. Individual and total beta activities of fission products at various times between 1-hr. and 1-yr. after detonation are furnished, with other data. (Microfilm: $1.75; Photostat: $2.50)... Development of Auxiliary Cyclotron Equipment for Using Tritium as Bombarding Particles in a Cyclotron, by D. N. Kundu, et al, National Advisory Committee for Aeronautics. Describes experiments conducted with a circulating system for radioactive tritium. (Microfilm: $1.75; Photostat: $2.50)...The above two reports available, as indicated, from Photoduplication Serv., Library of Congress, Washington 25, D. C.

BUSINESS BRIEFS...in the nuclear field...

STOCK ISSUE- Authorized number of shares of capital stock of Tracerlab, Inc., Boston nuclear products firm will be increased by 5½% , from 450,000 to 475,000 shares, according to W.E. Barbour, Jr., company president. He said that the 25,000 additional shares are to be offered in exchange for Kelley-Koett minority-held shares and for restricted stock options to key Tracerlab personnel. (Tracerlab recently acquired a controlling stock interest in Kelley-Koett Mfg. Co., Covington, Ky.) Tracerlab's annual report, Barbour stated, shows an 86% expansion in its own business in the nuclear field, plus the addition of Kelley-Koett's $9,000,000 gross in the medical X-ray field, during 1951. Earnings on a consolidated base, giving effect to the portion of Kelley-Koett stock held by Tracerlab during 9 months of 1951, he pointed out, were $417,858 before provision for Federal income taxes. Tracerlab reinvests about 15% of its commercial income in research and development of new instruments and applications of radioactivity, Barbour stated. He feels that 1952 will exceed by a large margin the record of the previous year.

NEW CONTRACT- Contract has now been entered into by du Pont with the South Carolina Generating Co. for the furnishing of 30,000 kw. of electric energy to the new Savannah River plant of the USAEC, on which du Pont is the prime contractor. (Plant will produce material for hydrogen bombs.) Electric power for operational phases of the plant also will be generated through USAEC facilities to be built by du Pont on the site proper.

ORDER PLACED- A $2,300,000 order for electric rectifiers was recently placed with the General Electric Co., Lynn, Mass., by the USAEC. In announcing the order, Fred Crowther, of G-E, called it the largest ever received for copper-oxide rectifiers. An estimated total output of 9,000 kw. of d-c will be supplied by the rectifiers, which are expected to be delivered to the USAEC within a year, it was stated by Crowther; they will be built at G-E's Lynn factory.

Sincerely,

The Staff,
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